Complete, thorough, and correct process safety management depends to a large extent on complete, thorough, and correct process hazard identification, both before and during the process hazards analysis (PHA) review. Findings from the examination of incidents and disasters in industry indicate that PHA reviews fail to identify a significant number of process hazards. This is unacceptable: we cannot manage a hazard if we don’t know that it exists, and incidents will continue to occur if PHA reviews continue to overlook process hazards.

HAZOP is widely recognized as the standard for conducting thorough PHA reviews, but it is not the only technique available. In this paper, outcomes of three actual HAZOP reviews in the oil & gas industry are compared and contrasted with the results for the same facilities using Process Flow Failure Modes (PFFM). PFFM is a unique method, best described as a highly efficient, highly effective cross between FMEA and HAZOP, enhanced by a customized visual tool. Differences in the success rate of the two methodologies to identify process hazards are quantified and discussed with the aim of improving the industry success rate in identifying process hazards during PHA reviews in a cost-effective, straightforward manner.

Keywords: Hazard and Operability (HAZOP) Studies; Failure Mode and Effects Analysis (FMEA); Process Hazard Analysis